

PUBLIC SAFETY DEPARTMENT[661]

Adopted and Filed

Pursuant to the authority of Iowa Code section 101.1, the State Fire Marshal hereby amends Chapter 226, “Liquefied Petroleum Gas,” Iowa Administrative Code.

The amendments update the current standards in order to adopt the most recent edition of the National Fuel Gas Code that has been developed by the National Fire Protection Association (NFPA).

The NFPA standards are designed to mitigate risks and to ensure safe installation of liquefied petroleum gas storage, handling, transportation and use and to prevent failures, leaks, and tampering that could lead to fires and explosions. The most recent standards reflect industry standards and promote safety.

Liquefied petroleum gas is a clean-burning fossil fuel that is primarily produced domestically. It can be adapted for many uses, and its use has increased in popularity in residential, agricultural, and commercial markets in the United States and elsewhere. Domestic and global demand is expected to increase markedly in the next five years. Safety standards are important for any fuels that can create public safety hazards, and adoption of the current national standards reflects the current state of knowledge and experience in the industry.

Notice of Intended Action for these amendments was published in the November 12, 2014, Iowa Administrative Bulletin as **ARC 1722C**.

A public hearing on the proposed amendments was held on December 2, 2014, at 9 a.m. in the First Floor Public Conference Room (Room 125), Oran Pape State Office Building, 215 East 7th Street, Des Moines, Iowa. Opportunities for written comments also were provided. Representatives of the Iowa Propane Gas Association were present for the public hearing and supported the amendments. These amendments are identical to those published under Notice of Intended Action.

Rules regarding liquefied petroleum gas are subject to the waiver provisions of rule 661—501.5(103). The State Fire Marshal does not have authority to waive requirements established by statute.

These amendments are not expected to have an impact on jobs in Iowa. The national code reflects current industry standards, and the adoption of those standards is not expected to affect jobs.

These amendments are intended to implement Iowa Code sections 101.1(4)“b,” 101.1(5), and 100C.3(7).

These amendments will become effective on March 25, 2015.

The following amendments are adopted.

ITEM 1. Amend rule 661—226.1(101) as follows:

661—226.1(101) General requirements. The provisions of the ~~International Fire Code, Chapter 38, 2009 edition, published by the International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041~~ National Fire Protection Association, NFPA 54, ANSI Z223.1-2015 National Fuel Gas Code, 2015 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2014 edition, published by the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471, and all references contained therein, are hereby adopted by reference as the general requirements for transportation, storage, handling, and use of liquefied petroleum gas, with the following amendments:

~~Delete section 3801.1 and insert in lieu thereof the following new section:~~

~~**3801.1** Scope. Storage, handling and transportation of liquefied petroleum gas (LP gas) and the installation of LP gas equipment pertinent to systems for such uses shall comply with this chapter, NFPA 54, ANSI Z223.1-2009 National Fuel Gas Code, 2009 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2008 edition, with the following amendments:~~

~~Amend NFPA 54, ANSI Z223.1-2009~~ 2015 National Fuel Gas Code, 2009 2015 edition, as follows:

~~Delete section 7.3.5.2 and insert in lieu thereof the following new section:~~

~~**7.3.5.2** Gas piping underground, outside a building, shall not be in physical contact with any concrete. Where it is necessary to install piping that will extend through or under an exterior concrete~~

slab for connection to a regulator or other part of the system, before entering a building, the gas piping shall be sleeved. The sleeve shall extend through the concrete and be sealed only at the end extending above grade to prevent the entrance of insects, debris, or moisture. All piping, fittings, and risers shall be protected against corrosion in accordance with NFPA 54, National Fuel Gas Code, ~~2009~~ 2015 edition, section 5.6.6.

Delete section 8.2.1 and insert in lieu thereof the following new section:

8.2.1 Leak checks using fuel gas (propane vapor) shall be permitted in piping systems that have been pressure-tested in accordance with 661—subrule 226.5(1).

Amend NFPA 58, Liquefied Petroleum Gas Code, ~~2008~~ 2014 edition, as follows:

Properties of LP-gases shall be determined in accordance with Annex B of NFPA 58.

Delete section 4.3.1 and insert in lieu thereof the following new section:

4.3.1 Stationary installations. Where a stationary installation utilizes a storage container of more than 2,000 gallons (7,570 L) of individual water capacity, or the aggregate water capacity of storage containers is more than 4,000 gallons (15,140 L) in water capacity, the installer shall submit plans (Liquid Propane Plan – DIVISION OF STATE FIRE MARSHAL) for such installation to the state fire marshal for review and approval. Installation shall not commence until written approval from the state fire marshal has been received. The local fire department [city or county where the tank(s) is located] shall be advised of each installation.

Delete section 5.2.3 and insert in lieu thereof the following new section:

5.2.3 DOT cylinders in stationary service that are filled on site and therefore are not under the jurisdiction of DOT shall be either requalified in accordance with DOT requirements or visually inspected within 12 years of the date of manufacture and every 5 years thereafter, in accordance with 5.2.3.1 through 5.2.3.3. The effective date for qualification and requalification requirements of this section shall be July 1, 2010.

5.2.3.1 Any cylinder that fails one or more of the criteria in 5.2.3.3 shall not be refilled or continued in service until the condition is corrected.

5.2.3.2 Personnel shall be trained and qualified to perform inspections. Initial and refresher training shall be in accordance with rule 661—226.4(101).

5.2.3.3 Visual inspection shall be performed in accordance with the following:

(A) The cylinder is checked for exposure to fire, dents, cuts, digs, gouges, and corrosion according to CGA C-6-2007, Standards for Visual Inspection of Steel Compressed Gas Cylinders, ninth edition, except that paragraph 5.2.1.1(1) of that standard (which requires tare weight verification) shall not be part of the required inspection criteria.

(B) The cylinder protective collar (where utilized) and the foot ring are intact and are firmly attached.

(C) The cylinder is painted or coated to retard corrosion.

(D) The cylinder pressure relief valve indicates no visible damage, corrosion of operating components, or obstructions.

(E) There is no leakage from the cylinder or its appurtenances that is detectable without the use of instruments.

(F) The cylinder is installed on a firm foundation and is not in contact with the soil.

(G) A cylinder that passes the visual examination shall be marked with the month and year of the examination followed by the letter “E” (for example, 10-01E, indicating requalification in October 2001 by the external inspection method) and the requalifier identification number (RIN) in accordance with the requalifying agency’s permit issued by the United States Department of Transportation.

(H) The results of the visual inspection shall be documented, and a record of the inspection shall be retained for a 5-year period or until the cylinder is again requalified, whichever occurs first.

5.2.3 Cylinders filled on site at the point of use.

5.2.3.1 DOT cylinders in stationary service that are filled on site at the point of use and, therefore, are not under the jurisdiction of DOT shall comply with one of the following criteria:

(1) The cylinders shall be requalified in accordance with DOT requirements.

(2) The cylinders shall be visually inspected within 12 years of the date of manufacture and within every 5 years thereafter, in accordance with 5.2.3.2 through 5.2.3.4.

5.2.3.2 Any cylinder that fails to meet one or more of the criteria in 5.2.3.4 shall not be refilled or continued in service until the condition is corrected.

5.2.3.3 Personnel shall be trained and qualified to perform inspections. Training shall be documented in accordance with rule 661—226.4(101).

5.2.3.4 Visual inspection shall be performed in accordance with the following:

(1) The cylinder is checked for exposure to fire, dents, cuts, digs, gouges, and corrosion according to CGA C-6-2007, Standard for Visual Inspection of Steel Compressed Gas Cylinders, tenth edition, except that 5.2.1.1(1) of that standard (which requires tare weight verification) shall not be part of the required inspection criteria.

(2) The cylinder protective collar (where utilized) and the foot ring are intact and are firmly attached.

(3) The cylinder is painted or coated to minimize corrosion.

(4) The cylinder pressure relief valve indicates no visible damage, corrosion of operating components, or obstructions.

(5) There is no leakage from the cylinder or its appurtenances that is detectable without the use of instruments.

(6) The cylinder is installed on a firm foundation and is not in contact with the soil.

(7) A cylinder that passes the visual examination is marked with the month and year of the examination followed by the letter E (e.g., “10-01E,” indicating requalification in October 2001 by the external inspection method) and the requalifier identification number (RIN) in accordance with the requalifying agency’s permit issued by the DOT.

(8) The results of the visual inspection are documented, and a record of the inspection is retained for a 5-year period or until the cylinder is again requalified, whichever occurs first.

Delete section 6.6.7.1 and insert in lieu thereof the following new section:

6.6.7.1 Installation of permanent, stationary containers on roofs of buildings shall be prohibited.

Delete section 6.6.7.2.

Delete section 6.7.2.7 and insert in lieu thereof the following new section:

6.7.2.7 The pressure relief valve discharge on each aboveground container of more than 2000-gal (7.6 m³) water capacity shall be piped vertically upward to a point at least 7 ft (2.1 m) above the top of the container, and the discharge opening shall be unobstructed to the open air.

Delete section 6.9.3.14 and insert in lieu thereof the following new section:

~~**6.9.3.14** Underground metallic piping shall be protected against corrosion as warranted by soil conditions (see section 6.16). Underground gas piping that is outside a building shall not be in physical contact with any concrete.~~

6.9.3.14 Metallic piping shall be protected against corrosion in accordance with 6.9.3.14(A) through 6.9.3.14(C). Underground gas piping that is outside a building shall not be in physical contact with any concrete.

(A) Piping and tubing of 1-inch (25 mm) nominal diameter or smaller shall be protected in accordance with 6.17.1 or 6.17.2.

(B) Piping and tubing larger than 1-inch (25 mm) nominal diameter and installed aboveground shall be protected in accordance with 6.17.1.

(C) Steel piping larger than 1-inch (25 mm) nominal diameter installed underground shall have a cathodic protection system in accordance with 6.17.2(C) unless technical justification is approved by the authority having jurisdiction.

Delete sections 6.14, 6.14.1, 6.14.2, and 6.14.3 section 6.14 in its entirety.

Delete section 6.15 in its entirety.

Delete paragraph 6.19.1.2(C) and insert in lieu thereof the following new paragraph:

6.19.1.2(C) Cylinders installed permanently on roofs of buildings shall be prohibited.

Delete paragraph 6.20.1.2(C) and insert in lieu thereof the following new paragraph:

6.20.1.2(C) Cylinders installed permanently on roofs of buildings shall be prohibited.

Delete section 6.19.11.1, including paragraphs (A) through (F), and insert in lieu thereof the following new section:

6.19.11.1 Cylinders installed permanently on roofs of buildings shall be prohibited.

Delete section 6.20.11.1, including paragraphs (A) through (F), and insert in lieu thereof the following new section:

6.20.11.1 Cylinders installed permanently on roofs of buildings shall be prohibited.

Delete section ~~6.19.11.2~~ 6.20.11.2.

Delete section 7.2.1.1 and insert in lieu thereof the following new section:

7.2.1.1 Transfer operations shall be conducted by qualified personnel meeting the provisions of rule 661—226.4(101).

Delete section 11.2 and insert in lieu thereof the following new section:

11.2 Each person engaged in installing, repairing, filling, or otherwise servicing an LP-gas engine fuel system shall be trained in accordance with rule 661—226.4(101) and trained under the applicable installation and maintenance procedures established by the manufacturer.

Delete section 3801.2.

Delete section 3801.3 and insert in lieu thereof the following new section:

3801.3 Construction documents. Where a single container is more than 2,000 gallons (7,570 L) in water capacity or the aggregate capacity of containers is more than 4,000 gallons (15,140 L) in water capacity, the installer shall submit construction documents for such installation to the fire marshal for review and approval. Installation shall not commence until written approval from the fire marshal has been received.

Delete section 3803.1 and insert in lieu thereof the following new section:

3803.1 General. LP-gas equipment shall be installed in accordance with NFPA 54, ANSI Z223.1-2009 National Fuel Gas Code, 2009 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2008 edition, except as otherwise provided in this chapter.

Delete section 3803.2.1.7 and insert in lieu thereof the following new section:

3803.2.1.7 Use for food preparation. Where approved, listed LP-gas commercial food service appliances are allowed to be used for food preparation within restaurants and in attended commercial food-catering operations in accordance with NFPA 54, ANSI Z223.1-2009 National Fuel Gas Code, 2009 edition, the International Mechanical Code, 2009 edition, and NFPA 58, Liquefied Petroleum Gas Code, 2008 edition.

Delete section 3803.3 and insert in lieu thereof the following new section:

3803.3 Location of equipment and piping. Equipment and piping shall not be installed in locations where such equipment and piping are prohibited by NFPA 54, ANSI Z223.1-2009 National Fuel Gas Code, 2009 edition.

Delete sections 3804 through 3804.4.

Delete section 3805.1 and insert in lieu thereof the following new section:

3805.1 Nonapproved equipment. LP-gas shall not be used for the purpose of operating devices or equipment unless such device or equipment is approved for use with LP-gas in accordance with NFPA 58, Liquefied Petroleum Gas Code, 2008 edition, sections 1.5 through 1.5.3.

Delete section 3806.1 and insert in lieu thereof the following new section:

3806.1 Attendants. Transfer operations shall be conducted by qualified personnel meeting the provisions of rule 661—226.4(101).

Amend sections 3803.2.1.6, 3809.3, and 3809.9, exception 3 to section 308.1.4, and the exception to section 3809.7 by deleting the phrase “water capacity of 2½ pounds” and inserting in lieu thereof the phrase “water capacity of 2.7 pounds.”

Delete section 3809.10 and insert in lieu thereof the following new section:

3809.10 Storage within buildings not accessible to the public. The maximum quantity allowed in one storage location in buildings not accessible to the public, such as industrial buildings, shall not exceed a water capacity of 735 pounds (334 kg) (nominal 300 pounds (136 kg) of LP-gas). Where additional storage locations are required on the same floor within the same building, they shall be approved by the authority having jurisdiction. Storage beyond these limitations shall comply with section 3809.11.

ITEM 2. Amend rule 661—226.4(101) as follows:

661—226.4(101) Qualifications of personnel.

226.4(1) Persons who transfer liquefied petroleum gas, who are employed to transport liquefied petroleum gas, or whose primary duties fall within the scope of this chapter shall be trained in proper handling and emergency response procedures.

a. Training shall include both initial training and refresher training that addresses but is not limited to safe work practices, the health and safety hazards of liquefied petroleum gas, emergency response procedures, and supervised on-the-job training.

(1) Initial training shall include participation in a training program and shall include both a written qualification assessment (closed-book test) and a skills assessment, based on the objectives set forth in the recognized training program and the requirements of NFPA 54 National Fuel Gas Code, ~~2009~~ 2015 edition, NFPA 58 Liquefied Petroleum Gas Code, ~~2008~~ 2014 edition, and any applicable requirements established in this chapter.

(2) Refresher training shall include both a written qualification assessment (closed-book test) and a hands-on skills assessment based on requirements of NFPA 54 National Fuel Gas Code, ~~2009~~ 2015 edition, NFPA 58 Liquefied Petroleum Gas Code, ~~2008~~ 2014 edition, and any applicable requirements established in this chapter.

(3) to (5) No change.

b. No change.

226.4(2) Persons who install, service, test, or maintain propane gas utilization equipment, or gas piping systems of which the equipment is a part, or accessories shall be trained in the proper procedures in accordance with applicable codes.

a. Initial training shall include participation in a training program and shall include both a written qualification assessment (closed-book test) and a skills assessment, based on the objectives set forth in the recognized training program and the requirements of NFPA 54 National Fuel Gas Code, ~~2009~~ 2015 edition, NFPA 58 Liquefied Petroleum Gas Code, ~~2008~~ 2014 edition, and this chapter.

b. Refresher training shall include both a written qualification assessment (closed-book test) and a hands-on skills assessment based on requirements of NFPA 54 National Fuel Gas Code, ~~2009~~ 2015 edition, NFPA 58 Liquefied Petroleum Gas Code, ~~2008~~ 2014 edition, and this chapter.

c. to f. No change.

226.4(3) All training programs shall be instructor-led by a competent trainer.

~~226.4(3)~~ **226.4(4)** Successful completion of the written qualification assessment and hands-on skills assessment shall satisfy the refresher training requirements of subrules 226.4(1) and 226.4(2).

ITEM 3. Amend rule 661—226.5(101) as follows:

661—226.5(101) Pressure testing.

226.5(1) Pressure testing required. After assembly and after any modification or repair, metallic LP-gas piping and hose shall be pressure-tested as follows:

a. Piping systems having operating pressures greater than 20 psig shall be pressure-tested in accordance with the following:

(1) Prior to acceptance and initial operation, all piping installations shall be visually inspected and pressure-tested to determine that the materials, design, fabrication, and installation practices comply with the requirements of this chapter.

(2) Inspection shall consist of visual examination, during or after manufacture, fabrication, assembly, or pressure tests as appropriate. ~~Supplementary types of nondestructive inspection techniques, such as magnetic particle, radiographic, and ultrasonic, shall not be required unless specifically required in this chapter or a standard or code adopted by reference in this chapter or in the engineering design.~~

(3) and (4) No change.

(5) A piping system shall be tested as a complete unit or in sections. A valve in a line shall not be used as a bulkhead between gas in one section of the piping system and test medium in an adjacent section, ~~unless two valves are installed in series with a valved “telltale” located between these valves a~~

double block and bleed valve is installed. A valve shall not be subjected to the test pressure unless it can be determined that the valve, including the valve-closing mechanism, is designed to safely withstand the pressure applied during the test.

(6) No change.

(7) Prior to testing the system, the interior of the pipe shall be cleared of all foreign material.

~~(7)~~ (8) The test medium shall be air, nitrogen, carbon dioxide, or an inert gas. Oxygen shall not be used.

~~(8)~~ (9) Test pressure shall be measured with a pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss due to leakage during the pressure test period. The source of pressure shall be isolated before the pressure tests are made. Mechanical gauges used to measure test pressures shall have a range such that the highest end of the scale is not greater than five times the test pressure.

~~(9)~~ (10) The test pressure to be used shall be no less than 50 psi and shall not exceed 75 psi.

~~(10)~~ (11) Expansion joints shall be provided with temporary restraints, if required, for the additional thrust load under test.

~~(11)~~ (12) Appliances and equipment that are not to be included in the test shall be either disconnected from the piping or isolated by blanks, blind flanges, or caps. Flanged joints at which blinds are inserted to blank off other equipment during the test shall not be required to be tested.

~~(12)~~ (13) Where the piping system is connected to appliances or equipment designed for operating pressures of less than the test pressure, such appliances or equipment shall be isolated from the piping system by disconnecting them and capping the outlet(s).

~~(13)~~ (14) Where the piping system is connected to appliances or equipment designed for operating pressures equal to or greater than the test pressure, such appliances or equipment shall be isolated from the piping system by closing the individual appliance or equipment shutoff valve(s).

~~(14)~~ (15) All testing of piping systems shall be ~~done with due regard for the safety of employees and the public during the test. Bulkheads, anchorage, and bracing suitably designed to resist test pressures shall be installed if necessary. Prior to testing, the interior of the pipe shall be cleared of all foreign material~~ performed in a manner that protects the safety of employees and the public during the test.

~~(15)~~ (16) Test duration shall be not less than one-half hour for each 500 ft³ (14 m³) of pipe volume or fraction thereof. The duration of the test shall not be required to exceed 24 hours.

EXCEPTION: When a system having a volume of less than 10 ft³ (0.28 m³) is tested, the test duration shall be a minimum of 10 minutes.

b. Piping systems having operating pressures of 20 psig or less, all polyethylene and polyamide piping, and piping to which NFPA 54 National Fuel Gas Code, ~~2009~~ 2015 edition, is applicable shall be tested in accordance with that code.

226.5(2) Testing for leakage. Immediately after the gas is turned on into a new system or into a system that has been initially restored after an interruption of service, the piping system shall be checked for leakage in accordance with this chapter and Section 8.2 of NFPA 54, National Fuel Gas Code, ~~2009~~ 2015 edition. Where leakage is indicated, the gas supply shall be shut off until the necessary repairs have been made.

a. All LP-gas piping systems that have operating pressures of 20 psig or less and all polyethylene and polyamide piping shall have system and equipment leakage tests performed in accordance with this chapter and Section 8.2 of NFPA 54, National Fuel Gas Code, ~~2009~~ 2015 edition.

b. and c. No change.

226.5(3) No change.

226.5(4) Out-of-gas customers or interruption of service system start-up procedure. When a delivery of propane is made to any on-site container which is out of gas, or if propane service was interrupted, the delivery person shall comply with the following procedures.

a. No change.

b. When the “out-of-gas customer” is present:

(1) The container service valve shall be shut off; and

(2) The gas customer shall be informed that the container is out of service and a qualified person must perform a leak check or other test on the system as required by this chapter or Section 8.2 of NFPA 54 National Fuel Gas Code, ~~2009~~ 2015 edition, before turning on the container service valve. Further action is the responsibility of the customer.

ITEM 4. Amend rule 661—226.8(101) as follows:

661—226.8(101) Installation and use of DOT specification MC330 or MC331 cargo tanks in stationary service. The installation and use of DOT specification MC330 or MC331 cargo tanks in stationary service shall be in accordance with NFPA 58, ~~2008~~ 2014 edition, and this chapter.

226.8(1) to 226.8(3) No change.

ITEM 5. Adopt the following new rule 661—226.9(101):

661—226.9(101) NFPA standards. To the extent that NFPA standards are inconsistent with International Fire Code standards, the NFPA standards shall control.

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EDITOR'S NOTE: For replacement pages for IAC, see IAC Supplement 2/18/15.